WHAT IS CLAIMED IS:

1. A reactor for treating a fluid medium, comprising:

a first, inner part-chamber;

a second, outer part-chamber; and

a catalyst-containing region arranged in the flow path of the medium, between the first and second part-chambers and having the medium flowing through it; wherein

the first part-chamber is surrounded at least partially by the second part-chamber;

the catalyst-containing region forms a partition between the first part-chamber and the second part-chamber; and

the partition comprises a nonwoven material with a catalyst material embedded therein.

2. The reactor according to Claim 1, wherein:

the first and second part-chambers are formed by two coaxially arranged tubes;

an innermost of the two coaxial tubes is closed off with respect to the outer tube at an end of a tube section which projects into the outer tube; and

at least part of a circumference of the projecting tube section is formed by the nonwoven.

3. The reactor according to Claim 1, wherein:

the first and second part-chambers are arranged coaxially with respect to one another;

the first part-chamber is designed in the form of a cone which projects into the second part-chamber; and

at least part of a circumference of the projecting tube section is formed by the nonwoven.

4. The reactor according to Claim 1, wherein the first part-chamber forms a feed of the medium into the reactor.

5. The reactor according to Claim 2, wherein the nonwoven has one of a folded and an undulating form.

6. The reactor according to Claim 1, wherein the nonwoven comprises a honeycomb monolith with honeycomb cells that are

closed on one side and have at least two nonwoven layers arranged one above the other, so that the honeycomb cells are arranged offset with respect to one another.

7. The reactor according to Claim 1, wherein additional catalyst material is arranged in the first part-chamber.

8. A catalytic burner for off-gas cleaning, comprising a reactor having:

a first, inner part-chamber;

a second, outer part-chamber; and

a catalyst-containing region arranged in the flow path of the medium, between the first and second part-chambers and having the medium flowing through it; wherein

the first part-chamber is surrounded at least partially by the second part-chamber;

the catalyst-containing region forms a partition between the first part-chamber and the second part-chamber; and

the partition comprises a nonwoven material with a catalyst material embedded therein.

9. A CO oxidation stage for the selective removal of CO in a hydrogen-containing gas mixture stream, comprising a reactor having:

a first, inner part-chamber;

a second, outer part-chamber; and

a catalyst-containing region arranged in the flow path of the medium, between the first and second part-chambers and having the medium flowing through it; wherein

the first part-chamber is surrounded at least partially by the second part-chamber;

the catalyst-containing region forms a partition between the first part-chamber and the second part-chamber; and

the partition comprises a nonwoven material with a catalyst material embedded therein.

10. A reforming reactor for reforming a hydrogen-containing medium, comprising:

a first, inner part-chamber;

a second, outer part-chamber; and

a catalyst-containing region arranged in the flow path of the medium, between the first and second part-chambers and having the medium flowing through it; wherein

the first part-chamber is surrounded at least partially by the second part-chamber;

the catalyst-containing region forms a partition between the first part-chamber and the second part-chamber; and

the partition comprises a nonwoven material with a catalyst material embedded therein.